Conceptual Design of Passage Facilities for the Hells Canyon Complex (E. 3.1-2, Chapter 9)

John W. Anderson
AFS Certified Fisheries Scientist
Cold Stream Consulting, P.O. Box 575 Baker City, OR 97814
Contracted by the
Oregon and Idaho Bureau of Land Management
November 4, 2002

I. Introduction

This chapter presents concepts for fish passage and evaluates them for their potential use at the HCC. The specific objectives were to 1) develop an overview of fish passage options that might be applicable, 2) develop an order-of-magnitude cost estimate for each option, and 3) qualitatively assess each option's potential for success if implemented.

II. Conclusion

[The following is a synthesis of the cost estimates for fish passage]

Downstream Passage (Smolt)

1. Brownlee Dam and Reservoir poses the most difficult downstream smolt passage problem. The study prepared three down stream passage options for Brownlee's dam and reservoir and cost estimates. They are:

1) Upstream reservoir collection system using floating gulpers, estimated cost $30.6 million. (Page 47, Paragraph 6)

2) Forebay collection using floating gulpers in the intake channel, estimated cost $16.4 million plus 10% operation and maintenance (O&M). (Page 47, Paragraph 5)

3) Spill release using a BGS or a guide wall, estimated cost $26 million. (Page 48, Paragraph 2)

2. Oxbow Dam options include:

1) Diversion screens, estimated cost $12.3 million plus 10% O&M costs. (Page 48, Paragraph 5)

2) Turbine passage, no estimate without further studies.

3. Hells Canyon Dam options include**:**

1) Diversion screens, estimated cost $18 million plus 10% O&M costs. (Page 49, Paragraph 3)

2) Spillway release, estimated cost 5.0 million plus 5% O&M costs. (Page 49, Paragraph 4)

Upstream Passage (Adults)
4. Hells Canyon Dam

1) Trap-and-haul facility, estimated cost $2.8 million plus 10% O&M costs. (Page 49, Paragraph 6)

1) Trap-and-haul facility, estimated cost $2.8 million plus 10% O&M costs. (Page 49, Paragraph 6)
2) Fish ladder, estimated cost $9.6 to 22.4 million plus 5% O&M costs. (Page 50, Paragraph 2)

5. Oxbow Dam
1) Trap-and-haul facilities, estimated cost $4.5 million plus 10% O&M costs. (Page 50, Paragraph 4)
2) Fish ladder, estimated cost $7.4 million plus 5% O&M costs. (Page 50, Paragraph 5)

6. Brownlee Dam
1) Trap-and-haul facilities, estimated cost $4.5 million plus 10% O&M costs. (Page 51, Paragraph 1)
2) Fish ladder, estimated cost $27.8 million plus 10% O&M costs. (Page 51, Paragraph 2)

Response:
The information is too preliminary and inaccurate for the BLM to make a determination.

III. Study Adequacy

The study should be considered preliminary. The costs are very rough, and there are numerous uncertainties as to whether the facilities will actually function as planned. The estimates should be refined to develop an accurate cost/benefit ratio for fish passage options.

IV. BLM Conclusions and Recommendations

Conclusions
The Sverdrup Corporation has upgraded its study since the first presentation on fish passage measures introduced at an Aquatic Work Group meeting. However, the uncertainty expressed in the study would suggest that they need to do more research before a realistic plan for fish passage upstream and downstream is presented. To their credit, they have covered most of the potential means of passing fish. The problem they are dealing with is that fish often do not respond to a passage facility as planned. There is no way of knowing for certain how the facilities will perform before the facility is constructed. They will be relying on knowledge gathered from other fish passage facilities and each one is unique to the dam it serves. The ladders that are proposed would be among the highest known and this poses considerable uncertainty. The applicant is almost certain to propose a trap and haul system.

It appears that the estimates of cost are quite high and designed to produce a negative cost/benefit ratio for fish passage. If passage facilities construction costs are extremely

costly and the habitat is in poor condition, it will be easier to convince FERC to forego fish passage requests and continue with a hatchery mitigation program.

Recommendations

The BLM should meet with the fisheries agencies and discuss the study and the cost estimates. The US Army Corp of Engineers engineering staff should be asked to review this document and provide their expert opinion on costs and passage options.